

To: The California Air Resources Board

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Re: Designing a Cap-and-Trade Program to Comply with AB 32's Environmental Justice Requirements

Date: March 31, 2008

California appears likely to adopt a cap-and-trade program as one component of its overall strategy for meeting AB 32's and the Governor's ambitious emission reduction goals. This draft framework was developed to provide input on how a cap-and-trade program could meet AB 32's environmental justice requirements and, more broadly, could contribute effectively to the State's emission reduction goals.

As an initial matter, and as ARB is well aware, a cap-and-trade program will not provide an automatic and autonomous mechanism for meeting the State's goals. While a properly designed market mechanism might contribute to creating appropriate incentives in a few sectors, it cannot be expected to instigate the fundamental transformations necessary to address climate change. Government agencies, working with a wide range of public citizens, will have to do the hard work to determine the kinds of technological, land use, transportation, consumer, and other changes that could cumulatively help the State achieve its ambitious goals. Relying on a cap-and-trade program as the primary mechanism for structuring reductions, in the hope that it would create a price signal that would allow the market to "do the right thing," would expect too much of the market's invisible hand. Markets may not be effective in creating the right price signals, they may operate on time horizons that are too short to influence appropriate long-term behavior, they may create unintended side effects, and they could cause distributional inequities. Relying primarily on the market to generate change would also privatize key decisions that should be made through an open and accountable public decision-making process. ARB's intensive scoping plan preparations suggest that the State is taking seriously the need to develop concrete sector-specific policies, and is not unduly relying on a cap-and-trade program.

Assuming that a cap-and-trade program is, however, one component of the state's scoping plan, then the State will have to address the serious issues of efficacy and equity that such programs raise. In considering market design, market advocates sometimes appear driven by the narrow drive to have the "market" succeed. However, a market-based system is a means to an end, not an end in itself. Focusing exclusively on market-related parameters for success, such as generating the most trades, or the lowest costs, or the easiest system to administer, or the easiest system to link to other trading programs, could undermine the state's achievement of other key goals, including:

- effectively and realistically achieving emission reduction targets;
- incentivizing new reductions and methodologies for achieving them;
- protecting already-burdened communities from additional pollution;
- achieving environmental co-benefits through co-pollutant reductions; and
- providing the state with other economic and environmental benefits.

Lowering pollution control costs is a worthwhile goal, but AB 32 requires a more comprehensive environmental policy that must, by definition, balance efficiency with other important objectives. The proposals below are not intended to eliminate efficiency gains; they are designed to lessen the conflicts between efficiency and distributional fairness.

The first section of this paper introduces several central precepts articulated by the environmental justice movement,<sup>1</sup> AB 32's legal requirements for achieving environmental justice, and the ways in which an unfettered market-based system could conflict with these goals and requirements. The second section of this paper proposes specific mechanisms that the California Air Resources Board ("CARB") and other policymakers could incorporate into a trading system to achieve AB 32's requirements as well as broader environmental goals. In addition, I have attached the draft of a paper entitled "Environmental Justice and Domestic Climate Change Policy," slated to be published in the Environmental Law Reporter in May 2008.

## **ENVIRONMENTAL JUSTICE GOALS, AB 32'S ENVIRONMENTAL JUSTICE MANDATES, AND THEIR IMPLICATIONS FOR MARKET MECHANISMS**

**Distributive Justice:** To achieve distributive justice, a central environmental justice goal, climate change policies should avoid increasing the existing disproportionate burden of environmental harms on poor and of-color communities. They should also improve air quality in communities already experiencing unacceptable levels of pollution. Numerous studies have confirmed that polluting facilities and activities are disproportionately located in poor, of-color communities. Many of these communities, both urban and rural, are in nonattainment areas, and experience significant health impacts from local air pollution.

**Distributive Justice and Co-Pollutants.** A carbon trading system to reduce greenhouse gases implicates not only greenhouse gases, many of which do not have local effects, but also the distribution of harmful co-pollutants, including toxics and criteria pollutants such as particulates, volatile organic compounds, nitrogen oxides, sulfur oxides, and benzene. In developing mechanisms to control greenhouse gases, regulators could inadvertently cause increases in harmful co-pollutants or fail to achieve co-pollutant reductions. To comply with AB 32, regulators must address not only greenhouse gas reductions, but the regulations' impacts on co-pollutants.

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<sup>1</sup> This paper, however, represents the views of its author alone. Many California environmental justice organizations have expressed their opposition to any form of a cap-and-trade program.

**Distributive Justice and Hot Spots:** AB 32 mandates that any market mechanism prevent hot spots. It states that a market mechanism, if adopted, must be designed “to prevent any increase in the emissions of toxic air contaminants or criteria air pollutants.”<sup>2</sup> CARB must also “[c]onsider the potential for direct, indirect, and cumulative emission impacts from these mechanisms, including localized impacts in communities that are already adversely impacted by air pollution.”<sup>3</sup>

Although many co-pollutants are subject to some control by existing air pollution requirements, existing controls allow facilities to increase emissions to a certain extent and under certain circumstances, thus creating an existing and on-going risk of hot spots<sup>4</sup>. Unlike a traditional regulatory approach that would require GHG emission reductions, with likely associated co-pollutant reductions, at all facilities, a trading system would allow facilities to purchase allowances to the extent permitted, perpetuating the existing hot spot risk.

Moreover, although many reductions in greenhouse gas emissions are likely to reduce co-pollutant emissions, some facilities could respond to market incentives by reducing their greenhouse gas emissions in ways that increase co-pollutant emissions. For example, diesel fuel is more efficient than gasoline from a carbon perspective. However, diesel fuel is responsible for a significant portion of the overall cancer risk in California. These risks are borne disproportionately by communities of color living near freeways, ports and other large transit centers. Efforts to reduce carbon emissions by replacing gasoline with diesel fuel could significantly increase cancer risks. Similarly, some emerging new power plant technologies are apparently more efficient from a greenhouse gas perspective, but could release significantly higher levels of toxic particulate matter pollution. Switching to these “green” power plants could actually increase or create new toxic hot spots around the power plants.

The existing regulatory structure for co-pollutants mitigates but does not eliminate the risk of co-pollutant hot spots. To meet AB 32’s requirements, a market-based system, if adopted, will need to ensure that a market-based system does not allow or encourage co-pollutant increases that exacerbate existing co-pollutant disparities.

**Distributive Justice and Co-Pollutant Reduction Co-Benefits.** AB 32 not only requires the State to adopt policies to prevent hot spots, it requires policies to ensure that polluted areas receive co-pollutant reduction benefits. The law states that climate change regulation should complement “efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions.”<sup>5</sup> Allowing facilities to purchase allowances to maintain existing emissions of toxics, as well as of criteria pollutants in nonattainment areas, would undermine the statute’s goal of improving air

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<sup>2</sup> CAL. HEALTH & SAFETY CODE § 38570(b)(2).

<sup>3</sup> *Id.* at § 38570(b)(1).

<sup>4</sup> For example, many air pollution requirements are set forth in terms of emission rates, operational requirements, or control technologies. Thus, a facility could increase the total amount of pollution it releases by increasing its rate of production or throughput, so long as it does not exceed its emission rate, violate operational requirements, or remove required pollution control technology.

<sup>5</sup> *Id.* at § 38562(4).

quality. More generally, AB 32 requires CARB to maximize the environmental co-benefits of climate change,<sup>6</sup> and nowhere are those co-benefits more important than in already-burdened communities.

A trading system could fail to equitably distribute the co-pollutant reduction co-benefit of climate regulation. In general, the more facilities reduce their carbon dioxide emissions, the more they are likely to reduce harmful co-pollutant emissions. For example, actions such as limiting flaring from refineries, capturing methane from landfills, and making industrial processes more energy efficient will reduce global warming emissions as well as conventional air pollution. If facilities use a market mechanism to maintain, rather than reduce, their emissions, then neighboring communities will fail to receive a co-pollutant reduction benefit. Environmental justice communities fear the hypocrisy of facilities claiming they are “green” due to their purchase of offsets or allowances for their greenhouse gas emissions, while continuing to spew co-pollutants from their stacks.

To meet AB 32’s requirement that greenhouse gas reduction measures generate environmental co-benefits and improve air quality in the state’s most burdened areas, a market-based system, if adopted, will need to ensure that a market-based system fosters improvements in air quality in areas of the state suffering from poor air quality.

**Distributive Justice and Program Success:** The success or failure of the program as a whole has significant environmental justice consequences: poor and disadvantaged communities in California and around the globe are the most vulnerable to the consequences of climate change and therefore have the most at stake in combating it. If emissions caps are not stringent enough, as has occurred in the RECLAIM and European Trading System, then real reductions will not occur. If allowance prices end up too low due to allowance overallocation or a national or international trading system that allows the use of cheap offsets or allowances, then facilities will not have a sufficient incentive to adopt greenhouse gas controls, and technology companies will not have a sufficient incentive to develop the innovative alternatives essential to the fundamental restructuring climate change requires.

**Participatory Justice:** To achieve participatory justice, another central environmental justice goal, climate change policies should provide the communities impacted by pollution with the capacity to participate in decisions that will affect them. The permitting procedures associated with command and control regulations currently allow such participation.

In a trading system, however, trades or auction purchases occur autonomously, depriving impacted communities of the opportunity to voice their views of the company’s practices or its likely impact on the community.

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<sup>6</sup> See *id.* at § 38501(h); § 38562(b)(6); 38570(b)(3).

AB 32 emphasizes the importance of public participation in the development of the state's climate change policy, although it does not speak directly to participation in the context of trades or auction purchases.

**Social Justice:** To poor and of-color communities, environmental burdens are significant not only in environmental terms, but within a matrix of broader social, economic, and political forces. To achieve social justice, climate change policies will need to address the potential economic impacts of climate regulation, including higher energy prices and other indirect economic impacts on disadvantaged communities. In addition, as the aftermath of Hurricane Katrina so vividly revealed, poor communities will require an influx of resources to adapt to the consequences of climate change.

Nonetheless, although the state's climate change policies are likely to impose economic costs, they are also likely to create significant technological and economic opportunities. Some of these opportunities, such as new jobs in designing and implementing energy efficiency initiatives, could be channeled toward poor and of-color communities through job training programs, educational programs, and other vocational opportunities. AB 32 explicitly requires the state to "direct public and private investment toward the most disadvantaged communities in California."<sup>7</sup>

## **MECHANISMS FOR INCORPORATING ENVIRONMENTAL JUSTICE**

The proposals below attempt to mitigate the adverse impacts of a market system and could help California meet its legal obligations. The first section outlines programs that directly address environmental justice concerns. The second section addresses various indirect parameters with environmental justice implications, such as emissions caps, sectoral scope, public access to trading and emissions data, geographic linkages, offsets, allowance banking, and whether to auction or freely distribute allowances.

### Direct Mechanisms for Addressing Environmental Justice

#### **(1) Combine a market-based mechanism with traditional regulation and other climate change policies designed to induce structural change.**

A traditional regulatory approach would require all facilities to reduce greenhouse gas emissions at the outset with a likely corresponding decrease in co-pollutants. By lowering baseline emissions, future increases in production would be less likely to create hot spots. Moreover, all communities would, at least theoretically, receive an initial co-pollutant reduction benefit from across-the-board reductions. In addition, such traditional regulation would presumably include public participation in the development of standards and in the permitting process.

A traditional regulatory component could also control the potential co-pollutant increases that could result from some greenhouse gas reduction efforts. Although most greenhouse gas reduction efforts are likely to reduce co-pollutants, additional limits or

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<sup>7</sup> *Id.* at § 38565.

controls could be placed on greenhouse gas reduction efforts that increase co-pollutants, such as gasoline-to-diesel conversions or the use of efficient power plant technologies that increase hazardous particulate emissions.

Including a traditional regulatory approach in addition to a cap and trade system is justified not only to reduce co-pollutants in disadvantaged communities, but to help the state achieve its dramatic greenhouse gas reduction goals. Given the wholesale modification of existing production and transportation systems that is necessary to meet Governor Schwarzenegger's 2050 goal of reducing emissions by 80 percent below 1990 levels, the state cannot afford to let any sectors avoid change by simply buying allowances.

Moreover, despite market mechanisms' potential to induce economically rational technology adoption and innovation, the invisible hand of the market does not always succeed. Facilities may fail to adopt efficient technology due to a lack of information, inertia, or ancillary complications created by adopting the technology. Creating incentives for new technology development is more complex than simply sending a potentially-unstable price signal. A traditional regulatory approach could require demanding and reasonable technology-forcing to ensure that all sectors take all feasible steps to reduce greenhouse gas emissions. A market mechanism could then allow for some variations in control to lower costs and create an incentive for technological or methodological innovations that go beyond what is already considered feasible.

This is not to suggest that traditional regulation combined with cap-and-trade will be sufficient to address climate change. Far-reaching policies, including such diverse areas as land use controls, investments in public transit, technology research and development investment and incentives, educational campaigns, will be necessary to accomplish the State's goals.

## **(2) Geographic Constraints on Trading.**

Given the severity of existing pollution in certain regions of the state, CARB could identify the most polluted communities and, in a trading system, prohibit trades that would increase co-pollutant emissions in these areas. If allowances are auctioned, the state could limit the number of allowances that existing facilities could purchase to an amount that is less than existing emissions.

Alternatively, allowance distributions or purchases for facilities in disadvantaged areas could require a significantly higher ratio of allowances per unit of emissions, comparable to the offset program in nonattainment areas under the Clean Air Act.<sup>8</sup> Another option would be to impose a fee on allowance purchases that would provide a substantial enough monetary incentive to induce facilities located in heavily-polluted

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<sup>8</sup> For example, under the Clean Air Act, new sources in already polluted areas ("non-attainment zones") must purchase up to 50% more offsets than are required in less polluted areas ("attainment zones"). The same principle could be applied under AB 32 to require greater greenhouse gas reductions in already polluted areas.

areas to achieve on-site reductions and technological innovations rather than purchase allowances. In an auction system, these proposals would also allow policymakers to avoid the controversial issues associated with determining facilities' preexisting baseline emissions.

Special rules could be developed to address trades between disadvantaged areas, rather than from an advantaged to a disadvantaged area. Trades that maintained existing emissions in one area but reduced them in another could provide a net benefit. However, trades that increased emissions in a burdened area would create unacceptable distributional inequities.

Reductions in disadvantaged areas could be encouraged by allowing facilities to sell allowances from disadvantaged areas. Allowances from non-disadvantaged areas could be given a lower value than allowances from disadvantaged areas in order to create a stronger incentive for reductions in disadvantaged areas.

### **(3) Creation of a Community Mitigation and Compensation Fund**

Another mechanism for achieving co-pollutant reduction benefits in disadvantaged communities would be to achieve them indirectly, by using the trading system to finance reductions from sources outside the trading system. In a trading regime, facilities could be charged a fee that would be devoted to a community mitigation and compensation fund to directly benefit disadvantaged communities. In an auction regime, a certain percentage of auction revenues could be devoted to the fund. Facilities in polluted areas could be required to contribute more to the fund than those in unpolluted areas to compensate for the additional consequences of their purchase and to create an incentive to reduce their own emissions rather than purchase allowances. The Fund would supplement, rather than replace, any existing resources to accomplish similar ends.

While the state could set priority goals for the fund and establish parameters for its use, the impacted communities should play a central role in determining the best use of the funds. That structure would provide at least a limited opportunity for the kind of public participation and self-determination that is central to the environmental justice movement.

The most important use of the fund would be to finance measures to decrease co-pollutant emissions in disadvantaged communities where the market-based system has maintained or increased existing emissions. Such measures could include:

- Public improvements, such as creating electrical outlets for trucks (to reduce idling) or electric vehicles
- Provide less-polluting mass transit
- Subsidize or fund improved mass transit to reduce automobile use
- Subsidize or fund lower-emission private vehicles
- Subsidize industry emission reduction efforts not already required by law

In the even that co-pollutant reduction opportunities in the areas impacted by trading are not available, however, alternative uses of the fund could include:

- Finance climate-friendly measures to improve poor and of-color communities' adaptation capacity. Such measures could include:
  - Create energy-efficient cooling centers in areas prone to heat waves
  - Subsidize “cooler” roofs (ones with higher solar reflectance), which reduce cooling costs, ambient temperatures, and help counter the effects of global warming by reflecting more incoming global solar radiation
  - Subsidize or fund private energy-efficient cooling devices (e.g., solar-powered air conditioning or swamp coolers) for vulnerable subpopulations, such as seniors
  - Provide health care insurance or clinics to address greater disease risks
- Finance measures to reduce greenhouse gas emissions, including:
  - Subsidize or fund weatherization projects
  - Subsidize or fund building energy efficiency improvements
  - Subsidize or fund solar installation in homes or businesses
  - Subsidize or fund the creation of parks that would provide recreation and sequester carbon

#### Design Parameters Indirectly Impacting Environmental Justice

##### **(1) Set Stringent Caps Well Below Actual Emissions Based upon Verified Data**

Since the cap-and-trade program is unlikely to include all sources, it will require a specific cap in light of the reductions expected from the included sectors. Prior trading systems have frequently responded to political pressures and emissions uncertainties by not setting stringent enough caps, leading to little, if any, actual reductions and allowance prices that were too low to incentivize emission reducing behavior. A stringent cap that creates a scarcity of allowances is essential to achieving real reductions and creating an adequate price signal for future reductions.

##### **(2) Limit Sectoral Scope to Sources that Can Be Accurately and Effectively Monitored**

It should first be noted that the proposals above presume a market-based system that encompasses “downstream” sources: those that directly emit co-pollutants. A market system focused on upstream sources, such as the carbon content of fuels, would not raise the same distributional concerns as one focused on emitting facilities.



Because the success and safety of market-based systems depends upon a regulatory authority's ability to accurately monitor emissions, a market-based system should include only those sources capable of being effectively monitored and verified. Without accurate monitoring, a facility could emit more than its number of allowances, imposing co-pollutant risks on neighboring communities and jeopardizing the state's achievement of its emission reduction goals. As a practical matter, the trading program should be limited to those facilities that can be accurately monitored.

### **(3) Require Public Participation in Connection with Trades or Auction Purchases in the Most Heavily Polluted Areas**

Requiring public participation in connection with all cap-and-trade transactions would be ideal, but could create significant transactions costs that may well render such participation infeasible. However, trades into the State's most-polluted areas raise significant concerns due to their co-pollutant impacts. In order to provide a check on potential fraud and ensure public accountability, trades into the State's most-polluted communities could incorporate public participation procedures.

### **(4) Require Frequent Emissions Reporting and Public Access to Emissions and Trading Information**

In the event that it proves too administratively difficult to incorporate public participation into all auction purchases or trading transactions, public access to emissions data is particularly important. If communities cannot have input into trading decisions, they should be able to monitor their consequences. Facilities should be required to report their emissions data frequently, and that data should be made publicly accessible. Accurate monitoring and public access to emissions information would allow communities and government agencies to track the impacts of the trading system. Government agencies could also be given the authority to respond to increases in pollution arising from trading by imposing additional constraints, like requiring higher allowance to emissions ratios.

### **(5) Limit Geographic Linkages**

The more that California facilities are permitted to purchase allowances or offsets from outside of the State, the less California residents will receive the co-pollutant reduction co-benefits of California's climate change legislation. If allowances or offsets are purchased out-of-state, California facilities will continue to emit greenhouse gases and co-pollutants while reductions or sequestration occurs elsewhere. While Californians do not want to deny residents of other states or nations the co-benefits of climate change regulation, as long as Californians are assuming the sacrifices of climate change regulation, they are entitled to reap its associated benefits. California also has a legitimate interest in channeling co-pollutant reduction benefits to the areas most in need of such benefits.

The cost reductions sought by allowing broad geographic trading have a dark side: if costs are too low, then necessary technological innovation will not occur. The more California facilities can purchase cheaper offsets or allowances outside the state, the less technological innovation will occur within the state. The state will not reap the economic benefits of such technological innovation, and the state's industrial base will not have a sufficient incentive to begin the inevitable and necessary transition to less carbon-intensive alternatives.

International trading through such mechanisms as the Kyoto Protocol's Clean Development Mechanism are particularly troubling. They could drive the price of allowances down so far that no innovation would occur within the state. Moreover, international projects to date suggest serious concerns about whether the promised reductions or sequestration are in fact occurring. For California, international trading could lead to business-as-usual in terms of both greenhouse gas and co-pollutant emissions, seriously undermining the state's ability to achieve AB 32's goals.

The State could impose limits or conditions on trades outside of California by limiting the percentage of allowances that could come from outside the state or are not within programs that are as rigorous as California's.

#### **(6) Limit or Prohibit Offsets**

Offsets derived from biological sequestration efforts, such as tree planting, would fail to achieve co-pollutant reduction benefits, and offsets from reductions in unpolluted areas or outside of California would fail to address the state's pollution challenges. The credibility of offsets is often at stake; they are valid only if truly additional, verifiable, enforceable, and permanent. In addition, offsets direct resources outside of the regulated sector, rather than directing the sector's resources to technology adoption or innovation within the sector. Furthermore, if offsets are too inexpensive, then they could undermine the price signal necessary for innovation. While limited use of certain kinds of offsets might be acceptable, especially those that encourage alternative energy or reduce co-pollutant emissions from facilities in polluted areas that not included in the trading system, the use of offsets should be carefully limited to avoid undermining AB 32's broader goals.

#### **(7) Limit or Prohibit Allowance Banking**

If facilities are allowed to bank allowances, then they could increase greenhouse gas emissions, and their co-pollutants, in greater quantities at a future point in time. This inter-temporal trading presents the same concerns about local impacts as geographic trading. Existing permits do not fully protect against hot spots, and inter-temporal trading could deprive communities of co-pollutant reduction benefits in the future. While some banking may be useful to encourage early reductions, facilities' use of banked emissions should be conditioned upon environmental parameters at the time of use.

## **(8) Auction Allowances**

The state should auction, rather than hand out, allowances. In that way, facilities would internalize the costs of pollution and have a greater incentive to reduce emissions rather than purchase allowances. An auction would also prevent facilities from realizing a windfall profit from selling allowances that they received for free, and limit the transfer of wealth from consumers, who must pay higher costs, to the facilities who profit from the free allowances. Auctioning credits would be similar to the auctioning of the radio spectrum, the selling of grazing rights for public lands, or the selling of mineral rights to mining companies. In each case, corporations are required to pay the public for the use of a public resource. The air should be no different.

An auction would also generate revenue that the state could use to finance a community benefit and mitigation fund, described above, as well as other mechanisms to soften the impact of AB 32 and help achieve its goals. In addition to reducing co-pollutant emissions, auction revenues could be used to finance energy efficiency measures for low-income residents or small businesses, invest in mass transit, invest in adaptation measures, invest in alternative technology, and for other purposes designed to mitigate and adapt to climate change.

## **CONCLUSION**

This memorandum proposes several initial ideas about how the state could meet AB 32's requirements for integrating environmental justice into a market-based system. While such integration would place some limits on the market's operation and efficiency, it would increase the likelihood that the pursuit of efficiency would not unduly compromise the state's laudable commitment to equality. As such, it could prove a model for the nation.